

CLAIMS

We claim:

1. A computer system, comprising:  
 a case including a first drive bay; and  
 a first drive assembly removably mounted in  
 the first drive bay, said first drive assembly  
 comprising:  
 a first hard drive; and  
 a first drive chassis, comprising:  
 a first rail provided along a first  
 side of the first hard drive;  
 a second rail substantially  
 parallel to the first rail and provided  
 along a second side of the first hard  
 drive opposite the first side; and  
 a retaining portion adjacent a  
 front side of the first hard drive and  
 connecting a front end of the first rail  
 to a front end of the second rail;  
 wherein the first drive chassis does not  
 include any portion which is adjacent to a top  
 surface and a bottom surface of the first hard  
 drive.

2. The computer system of Claim 1, further  
 comprising:  
 a second drive bay provided beneath the first  
 drive bay; and  
 a second drive assembly removably mounted in  
 the second drive bay, said second drive assembly  
 comprising:  
 a second hard drive; and  
 a second drive chassis, comprising:

a first rail provided along a first side of the second hard drive;

a second rail substantially parallel to the first rail and provided along a second side of the second hard drive opposite the first side; and

a retaining portion adjacent a front side of the second hard drive and connecting a front end of the first rail to a front end of the second rail;

wherein the second drive chassis does not include any portion which is adjacent to a top surface and a bottom surface of the second hard drive.

3. The computer system of Claim 2, wherein a lower plane of the first hard drive is separated from an upper plane of the second hard drive by less than about 0.1 inches.

4. The computer system of Claim 2, wherein: the case includes a top cover and a bottom cover;

an upper plane of the first hard drive is separated from the top cover by less than about 0.1 inches; and

a lower plane of the second drive assembly is separated from the bottom cover by less than about 0.1 inches.

5. The computer system of Claim 1, wherein said case is approximately 3.5 inches tall.

6. The computer system of Claim 1, wherein the case is adapted to be mounted in a 2U rack mount.

7. The computer system of Claim 1, wherein the first hard drive is a half-height hard drive.

8. The computer system of Claim 1, wherein the first drive bay is adapted to receive a half-height hard drive.

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9. The computer system of Claim 2, wherein the second hard drive is a half-height hard drive.

10. The computer system of Claim 2, wherein the second drive bay is adapted to receive a half-height hard drive.

11. The computer system of Claim 1, further comprising:

20 a first pair of guide rails provided on a first interior side of the first drive bay for receiving the first rail of the first drive assembly; and

25 a second pair of guide rails provided on a second interior side of the first drive bay opposite the first interior side for receiving the second rail of the first drive assembly.

12. The computer system of Claim 2, further comprising:

30 a first guide rail provided on a first interior side of the second drive bay for receiving the first rail of the second drive assembly; and

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a second guide rail provided on a second interior side of the second drive bay opposite the first interior side for receiving the second rail of the second drive assembly.

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13. The computer system of Claim 1, further comprising:

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a first notch provided on a first interior side of the first drive bay;

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a shoulder provided on a second interior side of the first drive bay opposite the first interior side;

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a handle rotatably connected to the retaining portion of the first drive chassis and having a first end and a second end distal from the first end, said handle being rotatable about an axis located between the first and second ends of the handle, said handle defining a closed position in which the first end of said handle is a first distance from the front end of the first rail of the first drive assembly, and said handle defining an open position in which the handle is rotated about the axis such that the first end of the handle is a second distance from the front end of the first rail of the first drive assembly, the first distance being less than the second distance;

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a first latch provided on the first end of the handle and adapted to engage the first notch when the first drive assembly is inserted into the first drive bay and the handle is in the closed position; and

a cam provided at the second end of the handle and adapted to abut the shoulder when the

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first drive assembly is inserted into the first drive bay.

14. The computer system of Claim 13, wherein the  
5 first drive assembly further comprises:

a spring providing a force on the handle,  
urging the handle to rotate from the closed  
position to the open position.

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10 15. The computer system of Claim 13, further  
comprising:

a second notch provided on the second  
interior side of the first drive bay;

15 a second latch provided on the second end of  
the handle and adapted to engage the second notch  
when the first drive assembly is inserted in the  
first drive bay.

20 16. The computer system of Claim 1, further  
comprising a fan provided in the case adjacent a rear  
portion of the first drive bay, said fan creating an  
airflow from a front side of the first drive assembly  
to a rear side of the first drive assembly.

25 17. The computer system of Claim 1, wherein a top  
portion of the case is formed of thin gauge sheet metal  
less than approximately 0.05 inches thick.

30 18. The computer system of Claim 1, wherein a  
bottom portion of the case is formed of thin gauge  
sheet metal less than approximately 0.05 inches thick.

19. The computer system of Claim 1, wherein the first drive bay is attached to a top cover of the case using spot welding.

5 20. The computer system of Claim 1, wherein the second drive bay is attached to a bottom cover of the case using spot welding.

10 21. The computer system of Claim 1, wherein:  
 a rear portion of the first drive bay  
 includes a light emitting member; and  
 the first rail of the first drive chassis  
 includes a light transmitting member for  
 transmitting light from the light emitting member  
 15 to a front portion of the first hard drive.

20 22. The computer system of Claim 21, wherein:  
 the first rail of the first drive chassis  
 defines a channel extending from a rear portion of  
 the first hard drive to the front portion of the  
 first hard drive; and  
 the light transmitting member is a fiber  
 optic filament provided in the channel.

25 23. The computer system of Claim 1, wherein:  
 a rear portion of the first drive bay  
 includes a light emitting member; and  
 the second rail of the first drive chassis  
 includes a light transmitting member for  
 30 transmitting light from the light emitting member  
 to a front portion of the first hard drive.

24. The computer system of Claim 23, wherein:

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the second rail of the first drive chassis defines a channel extending from a rear portion of the first hard drive to the front portion of the first hard drive, and

5 the light transmitting member is a fiber optic filament provided in the channel.

25. A hard drive mounting structure, comprising:
- 10 a hard drive bay including:
- a first notch provided on a first interior side of said hard drive bay; and
- a shoulder provided on a second interior side of said hard drive bay opposite the first interior side; and
- 15 a hard drive assembly, comprising:
- a hard drive;
- a body portion attached to the hard drive;
- a retaining portion attached to the body portion and positioned adjacent a front portion of the hard drive;
- 20 a handle rotatably connected to the retaining portion and having a first end and a second end distal from the first end, said handle being rotatable about an axis located between the first and second ends of the handle, said handle defining a closed position in which the first end of said handle is a first distance from the body portion, and said handle defining an open position in which the handle is rotated about the axis such that the first end of the handle is a second distance from the body
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portion, the first distance being less than the second distance;

a first latch provided on the first end of the handle and adapted to engage the first notch when the hard drive assembly is inserted into the hard drive bay and the handle is in the closed position; and

a cam provided at the second end of the handle and adapted to abut the shoulder when the hard drive assembly is inserted into the hard drive bay.

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26. The hard drive mounting structure of Claim

25, wherein the hard drive assembly further comprises:

a spring providing a force on the handle, urging the handle to rotate from the closed position to the open position.

27. The hard drive mounting structure of Claim

20 25, further comprising:

a second notch provided on the second interior side of the hard drive bay;

a second latch provided on the second end of the handle and adapted to engage the second notch when the hard drive assembly is inserted in the hard drive bay.

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28. The hard drive mounting structure of Claim

25, wherein the body portion comprises:

30 a first rail provided along one side of the hard drive;

a second rail provided along an opposite side of the hard drive;

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wherein the retaining portion is attached to a front end of the first rail and a front end of the second rail.

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29. The hard drive mounting structure of Claim 25, wherein the body portion does not include any portion which is adjacent to a top portion and a bottom portion of the hard drive.

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30. The hard drive mounting structure of Claim 25, further comprising:

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a first guide rail provided on the first interior side of the hard drive bay for receiving the first rail of the hard drive assembly; and

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a second guide rail provided on the second interior side of the first drive bay for receiving the second rail of the hard drive assembly.

31. The hard drive mounting structure of Claim 20 25, wherein the hard drive is a half-height hard drive.

32. The hard drive mounting structure of Claim 25, further comprising a fan adjacent a rear portion of the hard drive bay, said fan creating an airflow from a 25 front side of the hard drive assembly to a rear side of the hard drive assembly.

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33. A clip for retaining expansion boards on a computer system, comprising:

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a clip body;

a stabilizing projection attached to a top portion of the clip body, adapted to be mounted on a computer case such that said stabilizing

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projection extends to an exterior of the case and  
the clip body extends to an interior of the case;  
a first flange attached to a side of the clip  
body and adapted to abut a first expansion board,  
5 thereby preventing horizontal movement of the  
first expansion board.

34. The clip according to Claim 33, further  
comprising a second flange attached to a second side of  
10 the clip body and substantially parallel to the first  
flange, said second flange being adapted to abut a  
second expansion board, thereby preventing horizontal  
movement of the second expansion board.

35. The clip of Claim 33, wherein a bottom  
15 portion of the clip body is adapted to abut a shoulder  
on the computer case.

36. The clip of Claim 33, wherein the first  
20 flange is adapted to be inserted in a first slot  
provided on the computer case.

37. The clip of Claim 34, wherein the second  
25 flange is adapted to be inserted in a second slot  
provided on the computer case.

38. The clip of Claim 33, wherein the first  
flange is adapted to abut a mounting bracket provided  
on the first expansion board.

39. The clip of Claim 34, wherein the second  
30 flange is adapted to abut a mounting bracket provided  
on the second expansion board.